CARCASS WEIGHT AND GRADE PRICING*

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One of the single, clearest illustrations of trade-off between pricing accuracy and operational efficiency is the issue of carcass weight and grade pricing. This is a controversy that, according to the evidence recorded in ancient textbooks, must be about forty years old. A factor contributing to controversy is the vested interests that are pitted against one another once pricing inaccuracy is established as one of the facts of the world we live in. Where pricing inaccuracy occurs, you see, one man's disadvantage is another man's advantage. This tends to influence one's point of view.

The man who produces a superior product is usually interested in a superior price for his reward. The man who produces an inferior product, and he usually knows it if he does, is not in favor of any pricing system which rewards one man and penalizes another. Then there is the viewpoint of the man who buys the product. He usually likes to consider himself a competent buyer who knows quality when he sees it, and he enjoys the opportunity to buy a quality product for an average price.

Aside from the fact that prices related to a set of grades (grades always must identify product characteristics that are important to users) would result in differential prices related to product characteristics, there are other, more ordinary sources of pricing error. Take the business of buying finished livestock when what the buyer wants is the animal's carcass. It takes a keen eye and some training and judgment

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and not a little guesswork to convert a wholesale carcass value into a live animal price. Suppose a buyer comes into a feedlot with instructions from his boss on what steer and heifer carcasses of various grades are worth today. Or suppose he sits in an auction sale all primed with the same kind of information from the packing plant office. He has to judge at least two things every time he watches a pack of cattle move in front of him. What's the carcass grade? What's the dressing percentage? If he decides that 20 steers are 10 Choice and 10 Good and they will dress out at 60 percent, and then he gets them to the plant and 18 are Choice and they all dress 61, who pays for this error in the buyers judgment? The seller does.

Professional buyers of live animals often have a very impressive ability to make these judgments accurately, however, and most would agree that it is easier to get the desired accuracy when buying livestock in lots rather than when buying them individually. But because they know they can also make errors in judgment, they tend to be conservative so that their errors tend to center on the safe side, favoring the buyer. Moreover, there is a tendency for buyers, who know what they are looking for, to judge animals to be in the desired category more often than they really are. For example, typically finished cattle will most often be Choice, with a cutability (yield) grade 3 and dress out about 60 percent, and buyers will more often see these typical characteristics in live animals than will actually prove to be the case if they are subsequently carcass graded. Figure 15 through 19 provide illustrations.

Figure 15 compares results of a 1954 North Central Region (Midwest U.S.) study and a more recent Ohio study. In each case buyers estimated dressing percentage to the correct percent in only about 10 percent of the cases. But what is more important is that, in their errors, buyers in both studies were quite conservative, tending much more frequently to err on the low side than on the high side.

In estimating the grade of live animals, Ohio buyers "saw" the expected grade more frequently than it actually occurred when carcasses were graded by Federal graders (Figure 16). This caused buyers to recognize (and pay for) fewer Prime carcasses than they got (underpay) and to pay Choice prices for some of the Good carcasses they got (overpay). A net effect of this sort of pricing inaccuracy is to encourage the production of Good beef and discourage the production of Prime beef compared to the price differentials (price messages) that had funneled down through the marketing channel.

This tendency does not appear to be nearly as marked when cattle are purchased in lots. Note in Figure 17 that buyer accuracy is much better than is the case with the purchase of individual animals. This occurs because cattle in lots contain individual animals with diverse characteristics that produce counterbalancing errors. So the accuracy which is apparent in Figure 17, which represent average figures for cattle in lots, is somewhat illusory inasmuch as individual animals still realized prices that differed from the merits of individual carcasses.

The two buyer tendencies (of conservatism and of "seeing" the norm more often than it occurs) are apparent also in comparisons between estimated and actual cutability grade (Figure 18). Buyers paid for too many of the expected grade, underpaid for the more desired grades,

FIGURE 15

COMPARISON BETWEEN 1954 REGIONAL STUDY AND 1966 OHIO STUDY ACCURACY IN ESTIMATING DRESSING PERCENT

	Regional		Ohio	
	Number of Head	Percent	Number of Head	Percent
Estimated too high	234	33.0	95	36.96
Estimated correctly	73	10.3	25	9.7
Estimated too low	403	56.7	137	53.3
Total	710	100.0	257	100.0

Source: North Central Regional Publication No. 53, October, 1954, and Thomas, P.R., Comparisons Between Buyer Estimates of Live Cattle Yield Grades and Actual Carcass Performance, unpublished Ph.D. dissertation, Ohio State University, Columbus, 1967.

FIGURE 16

COMPARISON BETWEEN ACTUAL AND ESTIMATED CARCASS GRADE FOR 235 FED CATTLE 1966 CLASSIFIED BY U.S. CARCASS GRADES

Grade	Carcass Grade Buyer Estimates		Carcass Grade Federal Grader	
	Number	Percent	Number	Percent
Prime	5	2.13	17	7.24
Choice	192	81.70	163	69.36
Good	38	16.17	55	23.40
Total	235	100.00	235	100.00

Source: Thomas, P.R., Comparisons Between Buyer Estimates of Live Cattle Yield Grades and Actual Carcass Performance, unpublished Ph.D. dissertation, Ohio State University, Columbus, 1967.

FIGURE 17

COMPARISON BETWEEN ACTUAL AND ESTIMATED CARCASS GRADE FOR 550 FED CATTLE IN 24 LOTS, 1966 CLASSIFIED BY U.S. CARCASS GRADES

Grade	Carcass Grade Buyer Estimates		Carcass Grade Federal Grader	
	Number	Percent	Number	Percent
Prime	31	5.64	16	2.91
Choice	445	80.91	436	79.27
Good	74	13.45	98	17.82
Total	550	100.00	550	100.00

Source: Thomas, P.R., Comparisons Between Buyer Estimates of Live Cattle Yield Grades and Actual Carcass Performance, unpublished Ph.D. dissertation, Ohio State University, Columbus, 1967.

FIGURE 18

COMPARISON BETWEEN MEASURED AND ESTIMATED CUTABILITY GRADE FOR 209 FED CATTLE

Grade	Cutability Grade Live Estimates		Cutability Grade Carcass Measurement	
	Number	Percent	Number	Percent
1	0	0	7	3.35
2	48	22.97	74	35.89
3	159	76.08	106	50.72
4	2	.96	21	10.05
5	0	0	1	.48
Total	209	100.00	209	100.00

Source: Thomas, P.R., Comparisons Between Buyer Estimates of Live Cattle Yield Grades and Actual Carcass Performance, unpublished Ph.D. dissertation, Ohio State University, Columbus, 1967.

FIGURE 19

COMPARISON BETWEEN ACTUAL AND ESTIMATED CUTABILITY GRADE FOR 471 FED CATTLE IN 21 LOTS, 1966 CLASSIFIED BY U.S.D.A. CUTABILITY GRADE

Grade	Cutability Grade Buyer Estimates		Cutability Grade Carcass Measurement	
	Number	Percent	Number	Percent
1	6	1.27	26	5.52
2	205	43.53	231	49.05
3	227	48.20	192	40.76
4	33	7.00	21	4.46
5	0		1	.21
Total	471	100.00	471	100.00

Source: Thomas, P.R., Comparisons Between Buyer Estimates of Live Cattle Yield Grades and Actual Carcass Performance, unpublished Ph.D. dissertations, Ohio State University, Columbus, 1967.

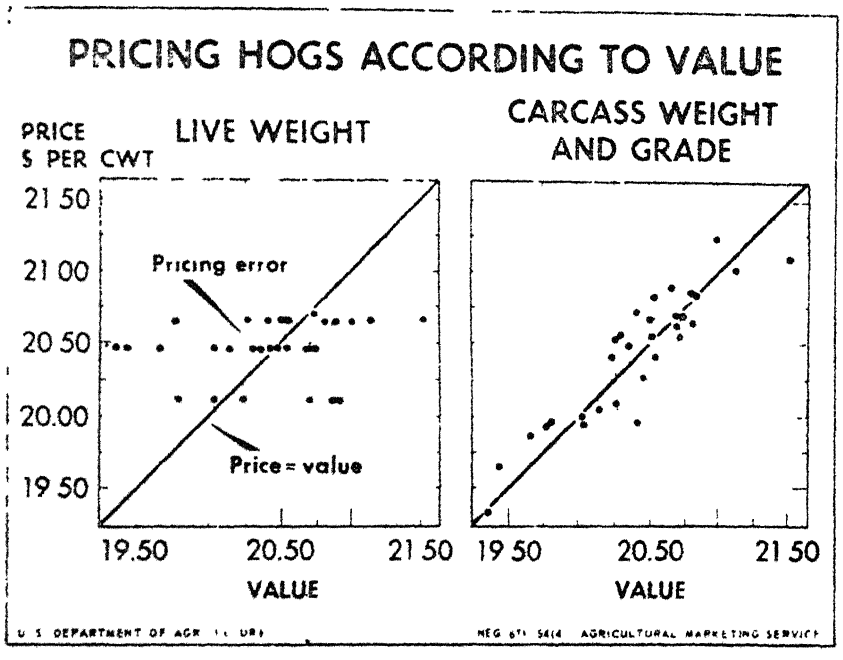
and overpaid for the least desired grades. The same tendency prevailed for cattle purchased in lots although the apparent accuracy was much improved (Figure 19).

Although Figures 20 and 21 are based on hog prices, they provide a particularly graphic illustration of improvements in pricing accuracy that can be realized with improvements in grades and grading accuracy. The greatest accuracy is acheived with carcass weight and grade pricing. Note the dramatic change in value-related pricing that occurs between hogs priced merely on liveweight as opposed to those same hogs priced on the basis of carcass weight and grade (Figure 20). This improvement occurs, of course, because of the ability to measure important value attributes and also by the elimination of some judgmental necessities, such as dressing percentage, that are needed to convert carcass values into live prices.

Figure 21 provides some particularly enlightening illustrations. It is based on 12 lots of 200-220 pound slaughter hogs. The illustration parallels what could be expected for cattle. In column 1 of Figure 21, all 12 lots received the same live price because they were all in the same weight range. What they were actually worth based on carcass cut-out (which would represent complete pricing accuracy) is shown in the second half of column 1. This same situation would prevail if ungraded cattle were bought and sold on the basis of their weight range alone, as in the case of ungraded feeder cattle.

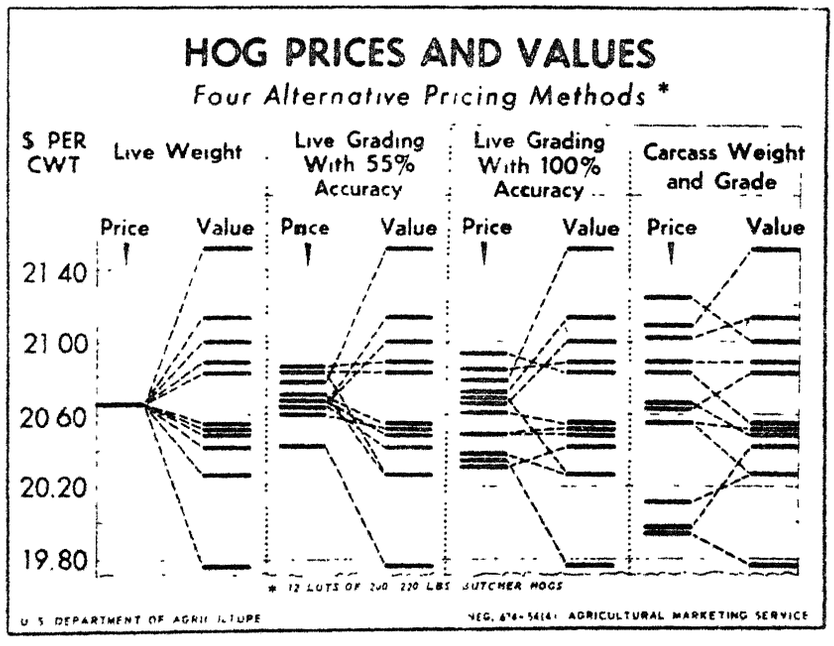
In the United States it is popular to buy and sell cattle and hogs on the basis of live grades, even though buyers are not completely accurate in eyeballing live animals and judging grades. This situation

FIGURE 20



Source: U.S.D.A. Presented in Williams, W.F.; and Stout, T.T., Economics of the Live-stock - Meat Industry, Macmillan, New York, 1964, Page 695.

FIGURE 21



Source: U.S.D.A. Presented in Williams, W.F., and Stout, T.T., Economics of the Livestock - Meat Industry, Macmillian, New York, 1964, Page 698.

is illustrated in the second column of Figure 21, where 55 percent live grading accuracy is assumed. Even under such a compromise arrangement, note that price differentials appear for the live animals, although they do not come close to imposing an adequate differential. Note also that the average price remains unchanged and that price differentials merely range above and below the average price. If buyers had been completely accurate in their live grade evaluations, further price improvement could be expected (column 3) but still would not equal carcass weight and grade pricing accuracy because the grades themselves are not perfect indicators of carcass attributes. Accurate live grading would, however, represent the best pricing accuracy that could be expected in the purchase and sale of graded feeder calves. It represents, as you see, a substantial improvement over prices based only on weight ranges of ungraded animals (column 1).

Column 4 represents the top practical limit to pricing accuracy that could be realized in commercial marketing channels. Note that prices more closely approximate carcass cut-out (primal cut) values than can be realized by the other simpler but more primitive methods.

Advantages and Disadvantages of Carcass Weight and Grade Pricing

That improved pricing accuracy accrues to carcass weight and grade selling is uncontestable. What usually causes controversy is (1) the cost to operating efficiency that this improved pricing accuracy involves, and (2) the fact that all participants do not benefit equally from improved pricing; some people get hurt. But a third and needless source of controversy is (3) a large amount of popular misconception and misunderstanding about the mechanics of making the

system work. You will notice all three sources of controversy in the following list of pros and cons surrounding carcass weight and grade pricing.

Advantages (Benefits, Payoff)

(1) Prices paid more closely reflect true product value. (Some people like this; some don't. Whether this is an advantage or a disadvantage depends on whose ox gets gored. It is a public advantage in any case.)

(2) No need to estimate or bargain about things like fill or dressing percentage. (The man who is already quite good at this is in an advantageous position and doesn't want things changed.)

(3) Makes possible easier sales by description as opposed to inspection. This broadens the market, increases demand. (Sellers and new buyers like this better than established buyers do.)

(4) Aids in the detection of sources of loss from disease, bruises, (These are costs of doing business, now amortized across all livestock purchases. This would identify and cost the actual sources of loss. Studies on cattle show that most brusing occurs after cattle are owned by the packer.)

(5) Promotes more rapid progress in genetic control, and breed improvement.

(6) Encourages production of products more closely related to consumer specifications, i.e., "quality production."

Disadvantages (Costs, Obstacles, Misunderstanding)

(1) The method is more complicated than simple marketing methods. Marketing costs may rise.

(2) A workable set of grades and standards needs to be available and agreed upon. (Alberta has these for fed cattle and carcasses.)

(3) An adequate system of market information on wholesale (carcass) values needs wide and frequent public distribution. (Alberta appears to lack an adequate system here.)

(4) A method of maintaining owner identity needs to be worked out. (How is the seller assured that carcasses he was paid for were from the live cattle he delivered? History records that some sort of third-party referee is usually required in order for both sellers and buyers to trust the system over time.).

(5) Suspicions must be overcome. (Were the scales accurate? A legal requirement and enforcement system is required. Was the grader correct? A third party grader and third party grades, i.e., Federal or Provincial grades and graders are at least a positive step in a desirable direction. Who pays for cooler shrink? What happens if carcasses are barely below a grade line? Standard terms of trade need to be specified).

(6) A way of correcting errors and satisfying complaints will be needed.

(7) Producers will not get paid immediately. (True. But perhaps producers have been spoiled in this respect. Who else in the marketing system gets paid immediately? A device to overcome this, however, is to pay a base price immediately, say 80 percent of expected final value.)

(8) Misunderstanding must be clarified.

(a) The producer pays for all the shrink. (How much change are we really talking about here? Packers pay for value delivered at the plant in any case. They subtract out the cost of probable shrink even now, either reducing live price accordingly or reducing liveweight with pencil shrink.)

(b) The producer pays for all the losses from bruises, deaths, cripples. (All producers pay this sort of cost now; it is an amortized cost of doing business. Under carcass pricing these costs could be more nearly levied against responsible parties, even buyers.)

(c) The producer pays for all the transportation to the packer. (He does so now, too. Remember, packer prices are based on delivered value. Live prices are plant minus transportation in feedlot purchases.)

(d) The producers' money finances the packer. (Financing is a necessary part of economic production (Figure 13). You can expect to finance a product you own to the killing floor. The packer has been doing it on live purchases, and reflecting that cost in his live price to producers).

(e) The producer doesn't get paid for the drop (hide, offal, etc.) (The value of the drop, which varies hardly at all even through wide variations in grade, is competitively considered under either system of purchases.)

(f) The producer loses his bargaining power after the cattle are dead. He can't bring them home again if he doesn't like the price. (Prices and terms of trade are negotiated before the sale is made.)

(9) The method usually requires referees. (To identify carcass ownership, enforce scale accuracy, grade carcasses, handle complaints and errors. This usually means more government presence in marketing.)

You have noticed that these controversial "Advantages" and "Disadvantages" are not all genuine obstacles. There are some genuine obstacles, such as the need for a wide public distribution of reliably reported wholesale prices, but there is also in these lists an assortment of uncertainties, misunderstandings, and biased points of view. Uncertainties and misunderstandings are easily handled. What is needed is prior clarification of these matters in the contractual arrangements that define the terms of trade. These will prove to be small difficulties. Even getting wholesale prices reported should not be an insurmountable obstacle. Your biggest single difficulty will prove to be that of dealing with bias and arriving at mutually satisfactory agreements about how to proceed. If you decide to proceed you will be able to draw on the experience of others in developing standardized procedures and terms of trade to deal with many uncertainties. Two sources that occur to me are the very advanced system of carcass weight and grade pricing that is used in Canadian hog marketing, and the guidelines for cattle marketing on a carcass basis that have been suggested by the Packers and Stockyards Administration of the U.S. Department of Agriculture.

A Final Question:

Is it worth it? Will it pay? Will the advantages in pricing accuracy more than cover the added costs of marketing complexity?

I am firm in the conviction that the answer is yes. More than a quarter century of research confirms this conviction. Your own Canadian hog marketing experience also is a strong testimonial. You have established a strong export position through a system of pricing that developed a superior product desired by a world-wide market. If you are active participants in the process by which this can be accomplished with cattle you can be influential in developing an effective marketing system with the minimum of government involvement you prefer.

Figure 22 summarizes the fundamental considerations you will encounter in dealing with the subject of carcass weight and grade pricing. Tomorrow I would like to turn to a large and conjectural illustration of price verse physical performance in the matter of Organization and Control of Agriculture.

FIGURE 22

SUMMARY

- GRADES ARE INTENDED TO HELP MAKE PRICES MORE ACCURATE

- ACCURATE PRICES ARE THOSE THAT DO AN ACCURATE JOB OF PAYING FOR VALUE

- ACCURATE PRICES DO NOT NECESSARILY MEAN HIGHER PRICES FOR EVERYBODY

- PRICING ACCURACY DECLINES AS THE ACCURACY OF PRODUCT IDENTIFICATION (GRADING) DECLINES. ACCURACY OF PRICES IN PAYING FOR VALUE DECLINES AS FOLLOWS:

Best		Highest
Pricing Accuracy	- Prices based on weighed and graded retail cuts - Prices based on weighed and graded primal cuts - Prices based on weighed and graded carcasses - Prices based on live animals weighed and graded - Prices based on live animals weighed but not graded - Prices based on live animals sold by the head (unweighed and ungraded)	Marketing Costs
Worst		Lowest

- BUT THE COST OF MARKETING ALSO DECLINES IN THE ORDER LISTED

- AND THE COMPLEXITY OF MARKETING DECLINES IN THE ORDER LISTED

- THE BEST PRICING WOULD COME FROM THE COSTLIEST, MOST COMPLICATED SYSTEM

- GETTING THE VERY BEST (MOST ACCURATE) PRICING POSSIBLE WOULD COST MORE THAN ITS WORTH

- AND THE SIMPLEST, CHEAPEST MARKETING SYSTEM WOULD YIELD THE MOST INACCURATE PRICES

SO:

- THE QUESTION IS:"HOW MUCH PRICING ACCURACY CAN YOU AFFORD?"

- PEOPLE USED TO BELIEVE THAT LIVE GRADED CATTLE AND HOGS OFFERED ABOUT ALL THE PRICING ACCURACY THE SYSTEM COULD AFFORD

- NOW YOU ARE CONSIDERING WHETHER OR NOT YOU CAN AFFORD THE GREATER ACCURACY OF CARCASS WEIGHT AND GRADE PRICING

- MORE THAN A QUARTER-CENTURY OF RESEARCH SAYS THAT THE ANSWER IS YES. AND THE RESULTS, AT LEAST OF THE PUBLIC RESEARCH, ARE PRACTICALLY UNANYMOUS